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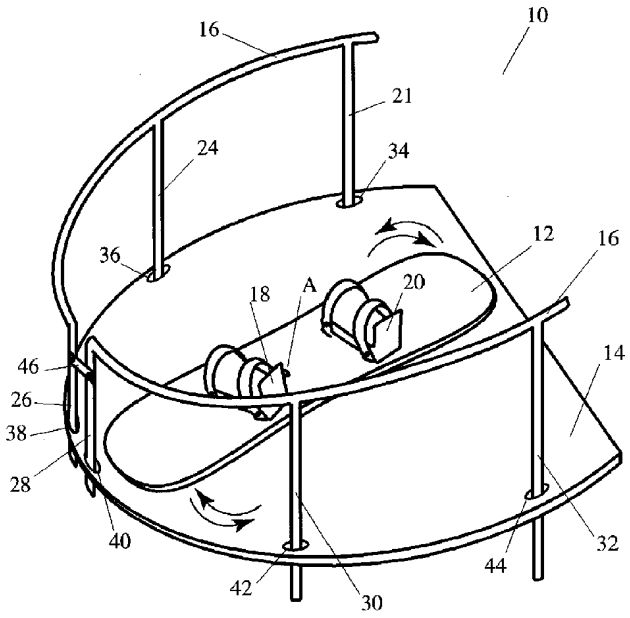
(54) **PLANCHE A NEIGE DE SIMULATION**
(54) **SNOWBOARDING SIMULATOR**



(57) Appareil de simulation conçu pour permettre à l'utilisateur de pratiquer certaines habiletés de base, son sens d'équilibre et certains mouvements nécessaires pour utiliser une planche à neige. L'appareil consiste en une planche à neige modifiée dotée de fixations et montée sur une plate-forme inclinée au moyen d'une articulation souple en caoutchouc. La planche à neige est dotée de blocs oscillants arrondis placés de façon transversale sous chaque fixation, ce qui permet à l'utilisateur de pratiquer le balancement d'une carre à l'autre de la planche à neige en pivotant sur l'articulation souple en caoutchouc qui est fixée directement derrière la fixation du pied avant. Le bloc oscillant arrondi placé sous la fixation du pied avant est doté de petites roues qui, en combinaison avec la position de l'articulation en caoutchouc, permettent à la planche à neige de pivoter librement sur l'articulation lorsque la planche est à plat et que le poids de l'utilisateur repose sur son pied avant, ce qui permet de pratiquer les mouvements à exécuter pour effectuer un virage sur une planche à neige.

(57) An apparatus designed to allow the user to simulate some of the basic skills, balance and movements of snowboarding. The apparatus has a modified snowboard with foot bindings attached and is mounted on an inclined platform, using a flexible rubber joint. The snowboard has rounded rocker blocks under each foot binding, extending from one side of the board to the other, which allow the user to simulate rocking from edge to edge on the snowboard as he/she pivots around the rubber joint attached just behind the front foot binding. The rounded rocker block under the front foot binding contains small wheels which along with the positioning of the rubber joint, allow the snowboard to pivot around this joint freely when the board is flat and the user's weight is concentrated on the front foot, thus simulating the movements required in a basic turn on a real snowboard.

SNOWBOARDING SIMULATION APPARATUS

ABSTRACT OF THE DISCLOSURE

An apparatus designed to allow the user to simulate some of the basic skills, balance and movements of snowboarding. The apparatus has a modified snowboard with foot bindings attached and is mounted on an inclined platform, using a flexible rubber joint. The snowboard has rounded rocker blocks under each foot binding, extending from one side of the board to the other, which allow the user to simulate rocking from edge to edge on the snowboard as he/she pivots around the rubber joint attached just behind the front foot binding. The rounded rocker block under the front foot binding contains small wheels which along with the positioning of the rubber joint, allow the snowboard to pivot around this joint freely when the board is flat and the user's weight is concentrated on the front foot, thus simulating the movements required in a basic turn on a real snowboard.

DESCRIPTION

This invention relates to a simulator and more specifically to one for learning and practicing some of the skills, balance and movements required for riding a snowboard.

It is common that learning to snowboard begins with buckling a snowboard to one's feet at the top of a hill then standing up and attempting to turn while sliding downhill. The use of an actual snowboard on a snow-covered hill for learning often results in bruises and can even result in a wide variety of more serious bodily injuries. Injury and the threat of injury prevents many people from ever learning or even attempting to learn how to snowboard.

There is, therefore, a need for a device which enables beginner snowboarders a means of learning the basic skills, balance and movements of snowboarding in a safe, non-threatening environment by removing the danger of injury from falling while sliding down a snow-covered slope on a conventional snowboard. The applicant's snowboarding simulator is such a device.

There are several existing U.S. Patents and Canadian Patent Applications for snowboard simulators. The United States Patents include: US Patent No. 5,192,258; US Patent No. 5,545,115; US Patent No. 5,496,239; US Patent No. 5,152,691; and US Patent No. 4,966,364. There are two Canadian Patent Applications on file: Application No. 2069197 and Application No. 2011310. These two Canadian Patent Applications are identical with US Patent No. 5,152,691 and No. 4,966,364 respectively, mentioned above.

None of these existing devices helps the beginner to understand the basics of snowboarding accurately by simulating how a real snowboard being used on a snow covered slope really works with respect to weight distribution and placement of the pivot point.

All the other snowboard simulators are merely devices for practicing general balancing skills which are not specifically related to the requirements of simulating the behavior of a real snowboard. These other snowboard simulators have no fixed fall-line, do not have a pivot point or do not have the correct pivot point, no railing and do not simulate the timing and coordination of edging and pivoting.

The behavior of the applicants' snowboarding simulator is designed around the Teaching Progression established by the Canadian Association of Snowboard Instructors (CASI). The CASI Teaching Progression distinguishes between five different skills. These skills form a five level pyramid. This pyramid structure illustrates the CASI teaching philosophy that one can not properly develop a skill without first developing the ones at the lower levels of the pyramid. The base of the CASI pyramid consists of "Stance and Balance". The next levels, in ascending order, consist of "Pivot", "Edging", "Pressure" and the combination of "Timing and Coordination" at the top level.

The single biggest hurdle for most beginner snowboarders is to overcome the fear/reluctance to place most of his/her weight on the front foot. The shifting of one's weight to the front foot is what causes a snowboard to turn downhill and is necessary for the proper execution of a turn. This weight transfer in addition to the rotation of the upper body are the key elements in performing a properly balanced turn on a snowboard. The applicant's device simulates how a real snowboard responds to this weight transfer and edge control and helps to encourage the correct movements of the upper body by means of the guidance provided by the semi-circular hand railing.

The applicants' snowboarding simulator has the added advantage of simulating the positioning and weight distribution needed to maintain a stationary position on a real snowboard on a real slope.

The applicants' device achieves a more correct simulation of the behavior of a real snowboard in several ways. It uses a platform on an incline in the same way in which a real snow-covered slope on which snowboarding takes place, is stationary and inclined. It uses a modified snowboard mounted on this stationary platform by means of a flexible rubber joint. The flexible rubber joint is fastened under and slightly behind the front foot. The positioning of this flexible joint causes the surface of the rear rocker block that is in contact with the platform, to unweight when the user's weight is transferred to the front foot. This unweighting allows the user to easily rotate the board through a simulated turn in which it pivots around the flexible rubber joint.

The flexible rubber joint in combination with the rocker blocks, also fastened to the underside of the modified snowboard, simulate the movement from edge to edge necessary in turning and carving a real snowboard.

The ability to interchange the standard rear rocker block with one containing unidirectional wheels simulates the impossibility of initiating a turn on a real snowboard while the "uphill" edge of the snowboard is in contact with the snow. In other words, it simulates the necessity of flattening the snowboard, so its base is flat against the surface of the hill, to initiate a turn on a real snowboard.

The device is designed to use any commercially available bindings used on real snowboards. This fact allows a user to test various bindings and snowboarding boots and combinations thereof without need of a snow-covered slope. In addition to providing a realistic environment to test bindings and boots, this simulator provides the user a means of learning the basic skills and balance of snowboarding using the most realistic means of foot mounting.

The device has circular hand railings encompassing approximately 240 ° of the inclined platform. These railings not only provide the user with a safe means of balancing but serve to promote the type of smooth upper body rotation needed to properly execute a turn on a real snowboard by acting as a guide.

To use the invention the user may assemble the device in an open area on a level surface. The user, wearing snowboarding boots, slips each foot into the foot bindings and fastens them. Then, standing up with the help of the hand railing, the user simulates the weight transfer, pivoting around the front foot and moving from edge to edge experienced on a real snowboard sliding down a snow-covered slope.

Further objects and features of this invention will become more apparent by reference to the following description taken in conjunction with the accompanying figures, in which:

Figure 1 is a side elevational view of the novel apparatus showing the turning radius potential, pivoting off point A;

Figure 2 is a side elevational view of the modified snowboard, showing a cross-section of the inclined platform, front rocker block, rear rocker block, flexible rubber joint, front foot binding and rear foot binding;

Figure 3 is a front view of the modified snowboard, showing a cross section of the modified snowboard mounted on the inclined platform (shown in crossection with the same side elevational orientation as in figure 2), the curve and orientation of the rocker blocks on the modified snowboard and the flexibility of the flexible rubber joint as restricted by the front and rear rocker blocks;

Figure 4 is a front view of the front rocker block, shown in crossection, with wheels mounted on axles, recessed into the front rocker block and protruding from bottom surface of said rocker block; Figure 4 also shows the bi-directional spin of the wheels recessed into the front rocker block;

Figure 5 shows a front view of the rear rocker block with wheels spinning on uni-directional bearings, mounted on axles, recessed into the rear rocker block and protruding from the sides of said rocker block; Figure 5 also shows the restricted direction of spin of said recessed wheels;

Figure 6 is an enlarged side elevational view of the rear rocker block with wheels mounted on axles, and recessed into sides of rear rocker block and fitted with uni-directional self-locking bearings (note: rear rocker block without any wheels may also be fitted to modified snowboard);

Figure 7 is an enlarged side elevational view of any of the six railing legs and any of the six fitted sleeve components fastened to inclined platform showing removable rod and holes in railing leg which allow for adjustment of railing height to accommodate different sized users; Figure 7 also shows an enlarged side elevational view of bolt and recessed nut in bottom of railing leg for adjusting the angle of the inclined platform and/or compensating for uneven ground upon which the simulator may be placed for use.

The applicants' novel snowboarding simulator will be described by referring to Figures 1 to 7 of the drawings. The snowboarding simulator is generally designated numeral 10 .

The basic components of the snowboarding simulator 10 are the modified snowboard 12, the inclined platform 14 and the semi-circular hand railing 16.

The modified snowboard 12 has a front foot binding 18 and a rear foot binding 20, a flexible rubber joint 22 attaching the modified snowboard 12 to the inclined platform 14, a front rocker block 48 and a rear rocker block 50, both of which are mounted directly beneath the front and rear foot bindings respectively.

The front rocker block 48 contains two wheels 52 and 54 set on axles 60 and 62 recessed into a slot cut into the bottom of the front rocker block. These wheels 52 and 54 reduce the friction between the inclined platform 14 and the front rocker block 48 when most of the user's weight is being exerted on the front foot and the modified snowboard is level with the surface of the inclined platform 14.

The rear rocker block 50 contains two wheels 56 and 58 set on axles 64 and 66 rotating on self-locking, uni-directional bearings 68 and 70 recessed into side of rear rocker block 50.

The semi-circular hand railing 16 with fastening gate 46 has six legs 21, 24, 26, 28, 30 and 32 with threaded nuts 72 fastened inside the bottom of each leg. The legs 21, 24, 26, 28, 30 and 32 insert into holes 34, 36, 38, 40, 42 and 44 cut into the inclined platform. Each leg inserts into a hole in the platform and through a sleeve 74 fastened to the underside of the platform. The height of the railing 16 can be adjusted by means of a number of holes 76 in the railing legs 21, 24, 26, 28, 30, and 32 that match up with holes cut into the sleeves 74 and removable rods 78. The length of the individual legs 21, 24, 26, 28, 30, and 32 can be adjusted by means of bolt 80 and recessed nuts 72.

While I have described our invention in connection with specific embodiments thereof, it is clearly to be understood that this is done only by way of example and not as a limitation to the scope of our invention as set forth in the objects thereof and in the appended claims.

CLAIMS

The embodiments of the invention in which an exclusive property is claimed are as follows:

1. A snowboarding simulator comprising:
a modified snowboard having a front end, a rear end, a left side, a right side, a top surface and a bottom surface;
an inclined platform and
a flexible rubber joint for mounting said snowboard on said inclined platform that allows said snowboard to spin through 360 degrees and rock from edge to edge.

2. A snowboarding simulator as recited in claim 1
further comprising a front foot binding and a rear foot binding fastened to said modified snowboard.

3. A snowboarding simulator as recited in claim 1
further comprising a rounded rocker block securely fastened under each foot binding and extending from one side of the board to the other with the thickest part of the block at the center of said modified snowboard while the blocks taper as they approach the side or edge of the said snowboard.

4. A snowboarding simulator as recited in claim 3
further comprising a front rocker block with one or more wheels mounted on axles inside the rocker block with 1 to 3 mm of the wheel(s) protruding from the surface of the rocker block to allow the snowboard to pivot around the said flexible rubber joint more freely when the user concentrates his/her weight on the front foot as opposed to the rear foot.

5. A snowboarding simulator as recited in claim 4
further comprising two interchangeable rear rocker blocks, one such block containing two wheels, which may only spin in one direction due to a locking bearing mechanism, with wheels mounted on axles and recessed into each side of the rocker block with 2 to 3mm of said wheels protruding from the surface of the rocker block so as to allow contact between one of these wheels and the surface of the inclined platform to prevent sliding the surface of the rocker block up the inclined platform so as to simulate the impossibility of sliding the downhill edge of a real snowboard "up-hill" when turning. The other rear rocker block, which may be installed to replace the above described rear rocker block, does not contain any wheels, axels or bearings but may be fitted with a smooth surface to reduce friction between the rear rocker block and the surface of the inclined platform.

6. A snowboarding simulator as recited in claim 5 further comprising a circular railing surrounding approximately 240 degrees of said inclined platform and connected to said inclined platform by inserting legs of railing into holes cut in said inclined platform and aligned with metal sleeves fixed to underside of said inclined platform with said railing legs being fixed by removable rods which insert into aligned, matching holes in said sleeves and railing legs.

7. A snowboarding simulator as recited in claim 6 further comprising a means of adjusting the height of said railing by removable rods and a series of holes in the legs of said railing at various different distances from the bottom of each leg.

8. A snowboarding simulator as recited in claim 7 further comprising a means of adjusting the angle of incline of said inclined platform and adjusting the length of the legs of said railing to compensate for uneven surfaces on which the snowboarding simulator may be set, by bolts inserted into threaded nuts secured and recessed into the bottom of each leg.

9. A snowboarding simulator as recited in claim 8 further comprising electronic sensors designed to recognize positions a real snowboard can and can not assume while riding a snow covered slope.

10. A snowboarding simulator as recited in claim 9 further comprising an interface between the said electronic sensors and a video display and/or audio system by which the user will be informed when his/her positioning and movements are correct or incorrect as compared with the positioning and movements required during the operation of a real snowboard.

Figure 1.

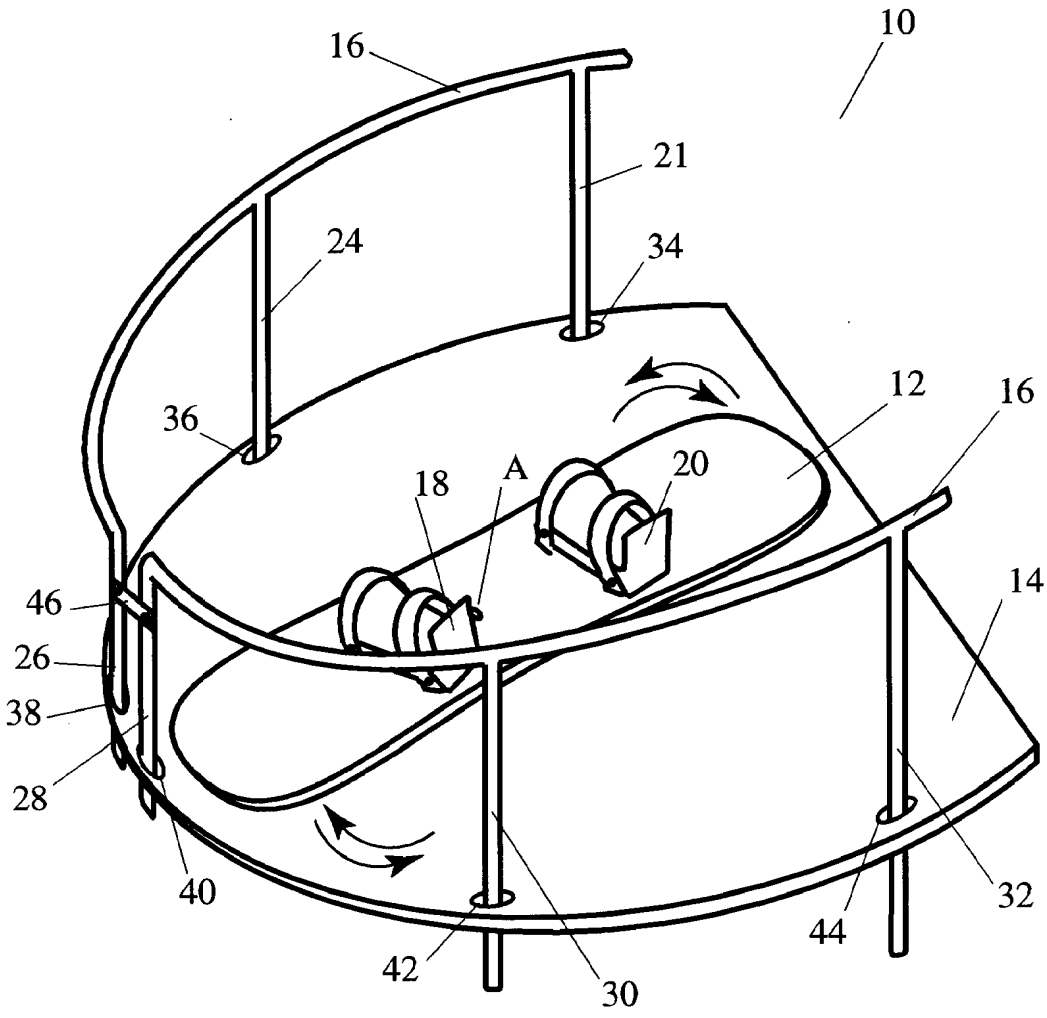


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Figure 2.

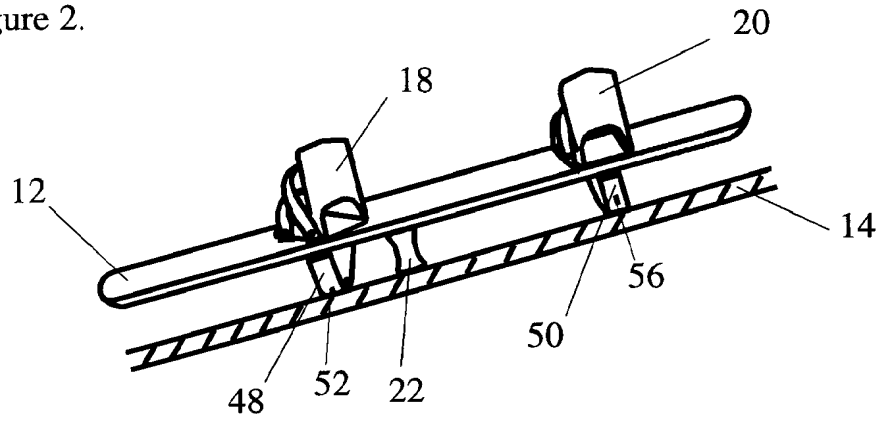

Figure 3.

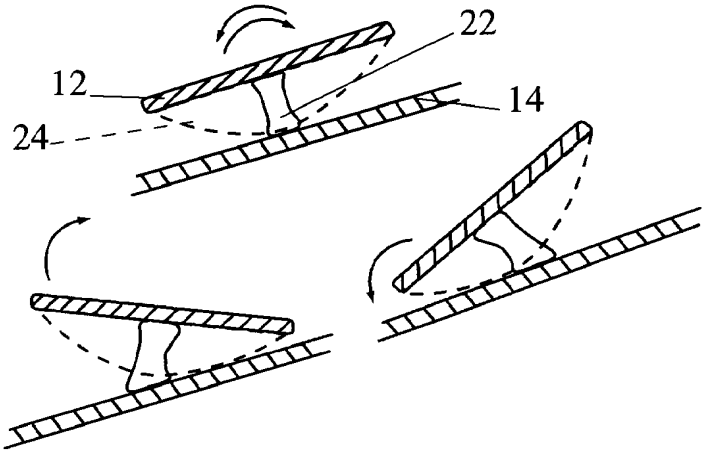

Figure 4.

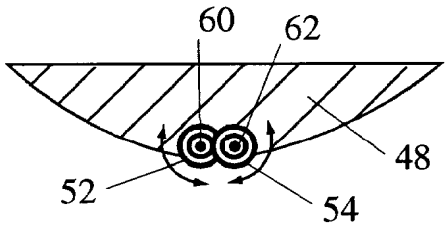

Figure 5.

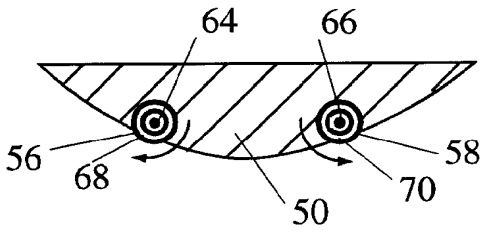

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Figure 6.

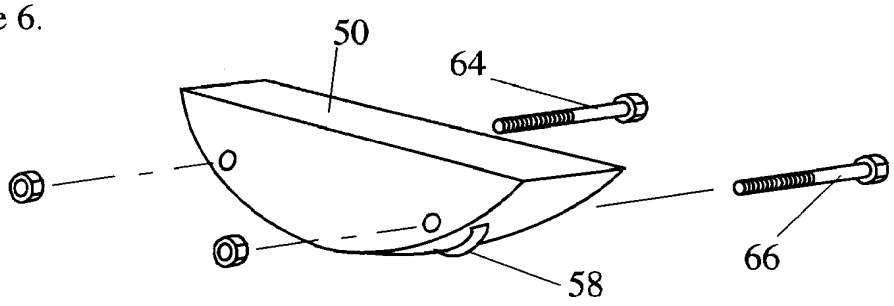
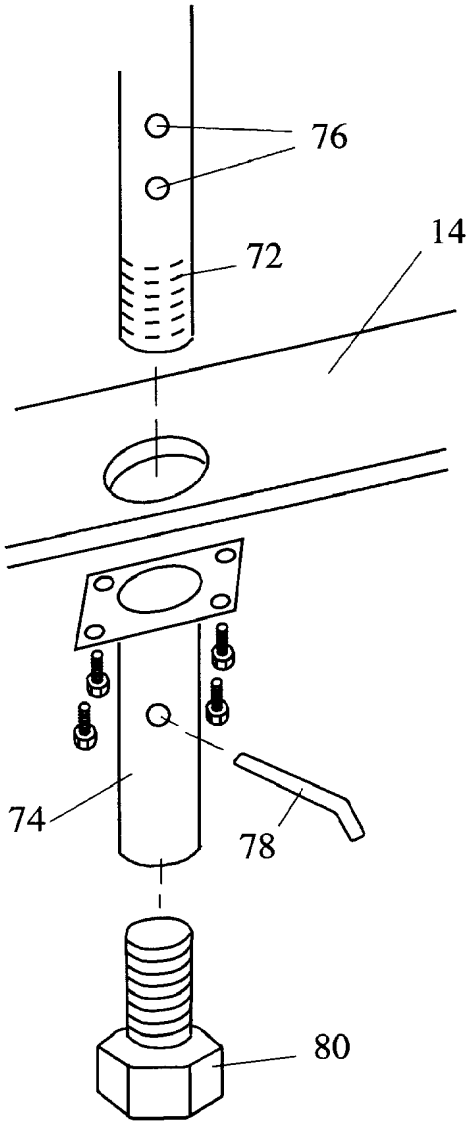


Figure 7.



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